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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,984	09/07/2000	Anthony M. Chiu	00-C-016	2247

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EXAMINER

NGUYEN, KHIEM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/656,984

Applicant(s)

CHIU, ANTHONY M.

Examiner

Khiem D Nguyen

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 21-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 21-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

In view of the arguments presented in the Appeal Brief filed March 3, 2003, paper No. 10, prosecution on the merits is reopened to address the issues raised in the Brief. The grounds of rejections in the prior Office actions are withdrawn, and new grounds of rejection are presented here. 37 CFR 1.193 (b)(2) applies:

(2) Where prosecution is reopened by the primary examiner after an appeal or reply brief has been filed, appellant must exercise one of the following two options to avoid abandonment of the application:

- (i) File a reply under § 1.111, if the Office action is not final, or a reply under § 1.113, if the Office action is final; or
- (ii) Request reinstatement of the appeal. If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (§ § 1.130, 1.131 or 1.132) or other evidence are permitted.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-8, and 21-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishii (U.S. Patent 5,835,988).

In re claims 1, 21, and 29-32, Ishii discloses a method of providing electrostatic discharge protection for an integrated circuit, comprising (See col. 4, line 28 to col. 5, line 59 and FIGS. 1-17):

mounting an integrated circuit die 1 on a lead frame (3b, 4b) (col. 4, lines 28-36);

encapsulating at least part of the integrated circuit die and a portion of the lead frame with a plastic or epoxy material 5b (col. 4, lines 37-49 and FIG. 4); and

folding an unencapsulated portion of the lead frame around sides of the encapsulated integrated circuit die and over or adjacent to a peripheral upper surface of the plastic or epoxy material (col. 5, lines 18-30 and FIG. 6).

In re claims 3, 22, and 23, Ishii discloses after mounting the integrated circuit die on the lead frame (FIG. 2), encapsulating exposed surface of the integrated circuit die except for a sensing surface (FIGS. 4) and encapsulating wire bonds 22 connecting the integrated circuit die to portions of the lead frame.

In re claim 4, Ishii discloses folding portions of the lead frame around each side of the encapsulated integrated circuit die (FIG. 6).

In re claim 5, Ishii discloses folding a first portion of the lead frame around a first side of the encapsulated integrated circuit die, wherein the first portion includes an opening providing access for a connector to pins electrically connected to the integrated circuit die (FIG. 6).

In re claim 6, Ishii discloses folding a first portion of the lead frame around a edges of the encapsulated integrated circuit not including leads electrically connected to integrated circuit die (FIG. 6).

In re claim 7, Ishii discloses folding a first portion of the lead frame around a side of the encapsulated integrated circuit die and folding a second portion of the lead frame extending from the first portion over a peripheral upper surface of the encapsulated integrated circuit die (FIG. 6).

In re claim 8, Ishii discloses folding a first portion of the lead frame around a side of the encapsulated integrated circuit die and folding a second portion of the lead frame extending from the first portion adjacent to and level with a peripheral upper surface of the encapsulated integrated circuit die (FIG. 6).

In re claim 24, Ishii discloses mounting the integrated circuit die on a flat lead frame having the lead portions projecting from at least one edge and the electrostatic discharge protection portion projecting from at least one edge (FIG. 4).

In re claim 25, Ishii discloses wherein the electrostatic discharge protection portion of the lead frame projects from an edge other than an edge from which the lead portions project (FIG. 4).

In re claim 26, Ishii discloses the electrostatic discharge protection portion extending around the lead portions and beyond ends of the lead portions (FIG. 4).

In re claim 27, Ishii discloses wherein the electrostatic discharge protection portion of the lead frame projects from at least two opposing edges of the lead frame (FIG. 4).

In re claim 28, Ishii discloses wherein the electrostatic discharge protection portion of the lead frame projects from at least three edges of the lead frame, including one edge from which the lead portions project (FIG. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii (U.S. Patent 5,835,988) as applied to claims 1, 3-8, and 21-32 above, and further in view of Mekdhanasarn et al. (U.S. Patent 5,773,876).

Ishii fails to explicitly disclose connecting the portion of the lead frame folded around the sides of the encapsulated integrated circuit die and over or adjacent to the peripheral upper surface of the plastic or epoxy material to a ground voltage as recited in present claim 2.

Mekdhanasarn discloses connecting the portion of the lead frame 114 folded around the sides of the encapsulated integrated circuit die 104 and over or adjacent to the peripheral upper surface of the plastic or epoxy material 122 to a ground voltage (col. 3, line 24 to col. 4, line 7 and FIGS. 1-6). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Ishii and Mekdhanasarn to enable the process of connecting the portion of the lead frame to a ground voltage of Ishii to be performed and furthermore to shunts the voltage surge to ground and protects the sensitive circuit components of die from possible burnout by electrostatic discharge (col. 4, lines 3-7).

Conclusion


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (703) 306-0210. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaudhuri Olik can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9179 for regular communications and (703) 746-9179 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
May 17, 2003


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800